

O44.6**Micro-climatic and hydrological indicators of the influence of *restorated* mangroves in Guyana**

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Abstract

Entire Guyana's coastal area which extends for 430 km along the Atlantic coast with varied width of 26 to 77 kilometres lies below 0.5 metres to 1.0 meter of the mean Atlantic Spring Tide Mark. To protect the coastal boundary, a man-made sea defence system in stone wall construction (for example) was put in place. Historically, Guyana's mangrove forests have been recognised as one of the most natural forms of coastal defence, but these have been depleted due to both natural and human-induced activities. The Guyana Mangrove Restoration Project (GMRP) was established in 2010 with the main aims of promoting sustainable management of the mangroves – including but not limited to mangrove rehabilitation and replanting. Most previous evaluation of the restoration efforts has focused on the success or otherwise of the project. Contrary to other studies, this study explores the integrated influence of the mangrove restoration efforts and mangrove covers on the multiple climatic and hydrological parameters. The multi-year-averaged data analysed revealed that there is a general relationship between the development of mangrove cover and the micro-hydrological and climatic conditions in the regions where the restoration projects are implemented. Here, the yearly mangrove covering areas for the three coastal regions of the country were extracted from the USGS Landsat and Sentinel remotely sensed data from 2010 to 2020. Categorised micro-hydrological and climatic variables were also derived for each study sites. The specific hydro-climatic parameters considered in this study are temperature, solar radiation, evapotranspiration, and precipitation. Changes in patterns of micro hydro-climatic conditions were correlated with the changes in mangrove area coverages. This study confirms the positive and possible influence of mangrove project in the wider coastal area environment, not only in terms of coastal protection but in the overall influence on micro- hydrological and climatic variables.

Keywords

Mangrove Restoration, Mangrove forest area coverage, micro-hydrology, micro-climate